

# Skiatook Lake Drought Issues and Management



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# Purpose

The purpose of the Interagency Drought Management Committee is to identify drought related issues and suggested actions which will serve the most critical needs with the remaining project storage.

Actions that are identified will be worked on by Federal and State Agencies.



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# Skiatook Lake Drought Issues and Management

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Chief, Water Management Section

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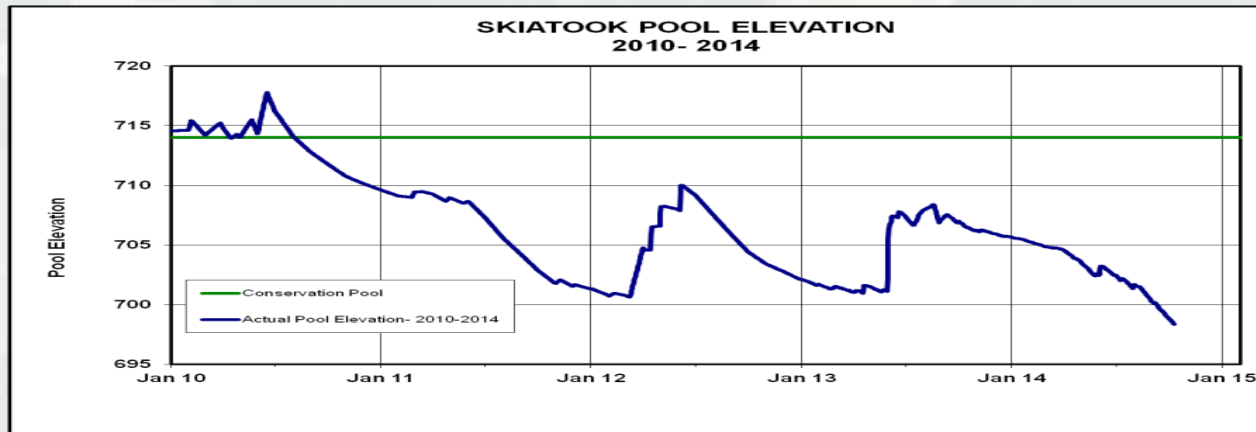
# Skiatook Lake

## Current Situation

- Water supply for Sapulpa, Sand Springs, Skiatook, and Osage County RWD #15 (future)
- Water quality releases required to meet permit requirements as measured at Sperry
- Conservation pool at 698.3 (down 15.7')
- 56% conservation pool



## Lake Elevation During the Drought

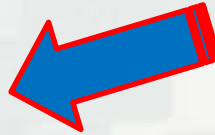


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# Skiatook Lake

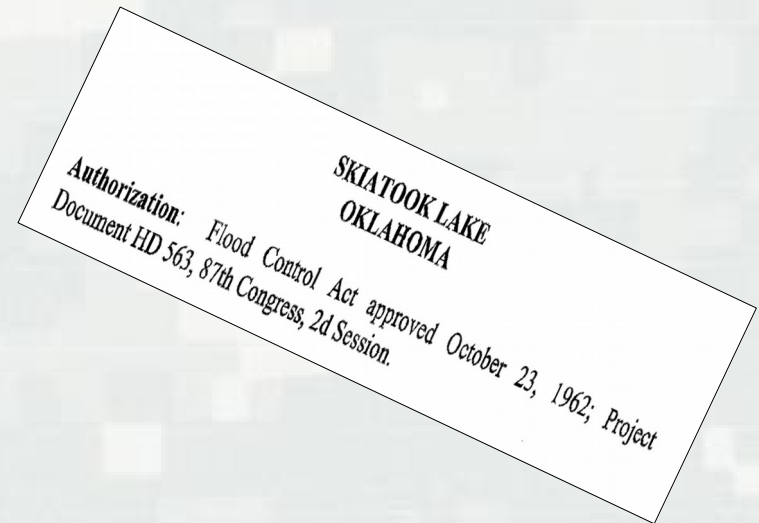
- Authorized purposes include:

- ▶ Flood Control \*
- ▶ Water Supply \*
- ▶ Water Quality \*
- ▶ Fish and Wildlife
- ▶ Recreation



\* Purposes that have allocated storage and control water management operations

Authorized purposes are the reasons the lake was constructed and every lake is unique



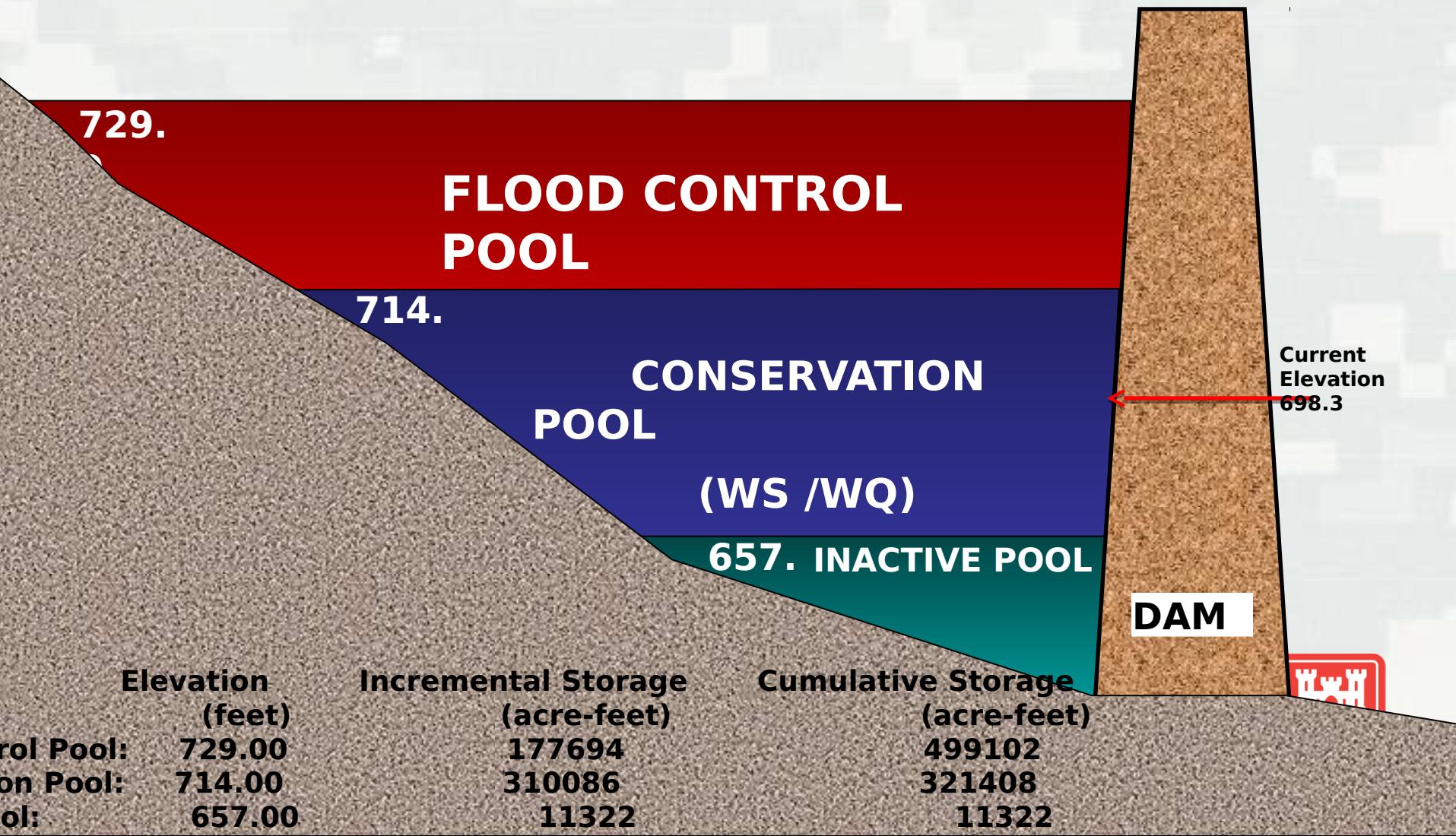
	Elevation	Incremental Storage		Cumulative Storage	
	(feet)	(inches)	(acre-feet)	(inches)	(acre-feet)
Surcharge Pool:	729.00	0.00	0	0.00	499102
Flood Control Pool:	729.00	9.41	177694	26.44	499102
Conservation Pool:	714.00	16.42	310086	17.02	321408
Inactive Pool:	657.00	0.60	11322	0.60	11322



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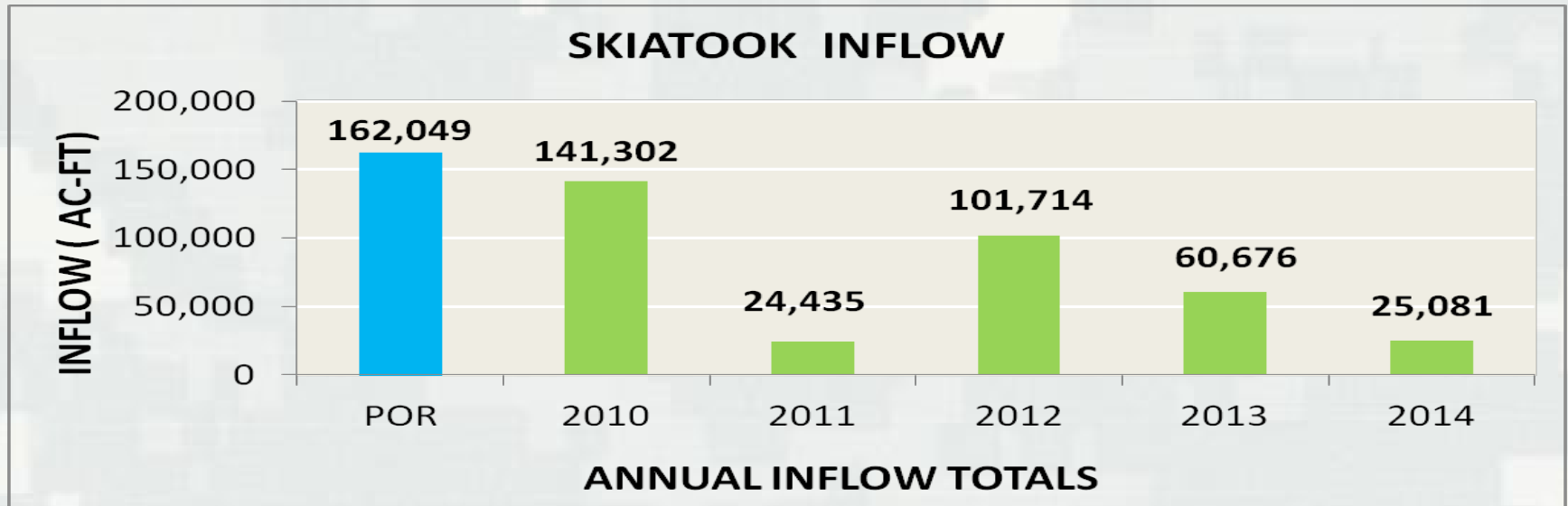
# Storage Zones

## Skiatook Lake



# Skiatook Lake

## Significant Drought



## Statistics

- Below average rainfall since 2009
- 2011-2013 - Lowest 3-yr inflow period since impoundment
- 2011- Worst single year
- 2014 -Tracking to be 2<sup>nd</sup> lowest inflow year
- **Requires over 7 inches of runoff over the entire watershed to refill the pool**

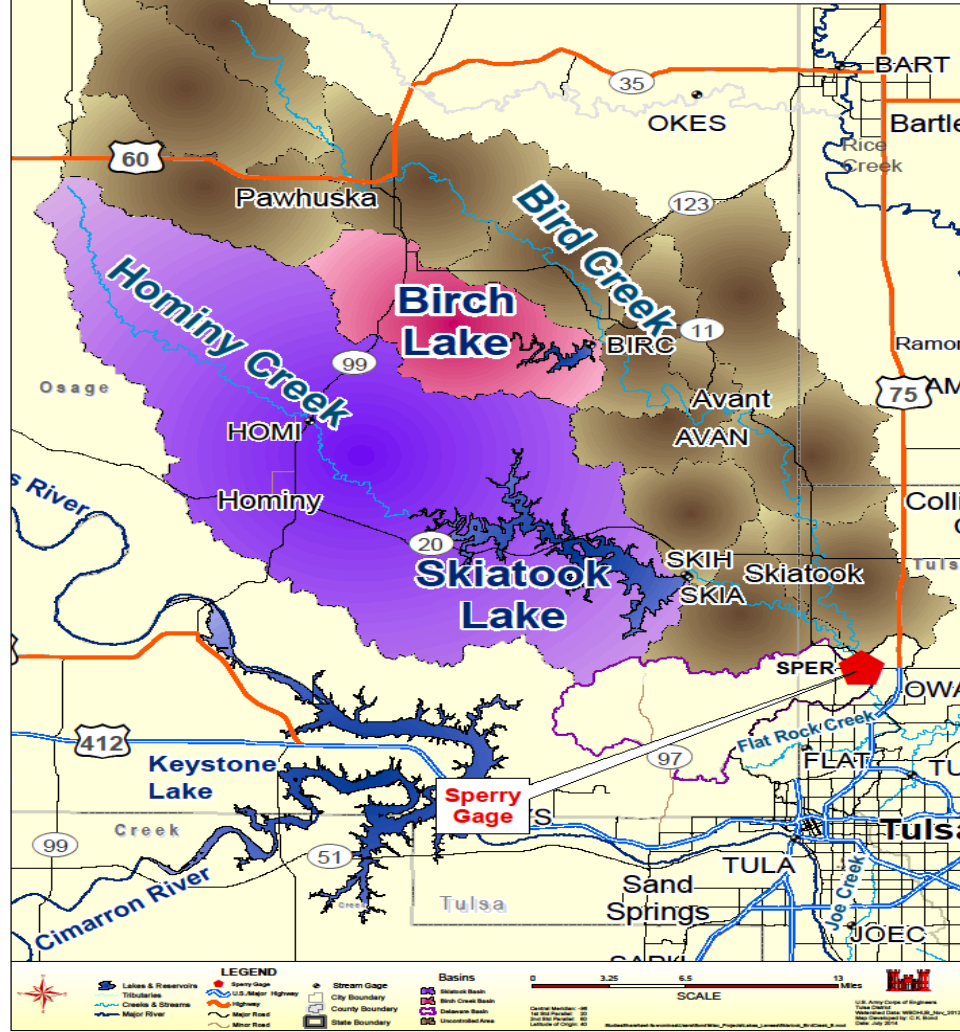


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## Bird Creek/Skiatook Lake Watershed

**Skiatook Lake:** 354 Sq. Miles  
**Skiatook Conservation Pool:** 310,086 ac-ft  
**Birch Lake :** 66 Sq. Miles  
**Birch Conservation Pool:** 14,893 ac-ft  
**Sperry Gage:** 905 Sq Miles

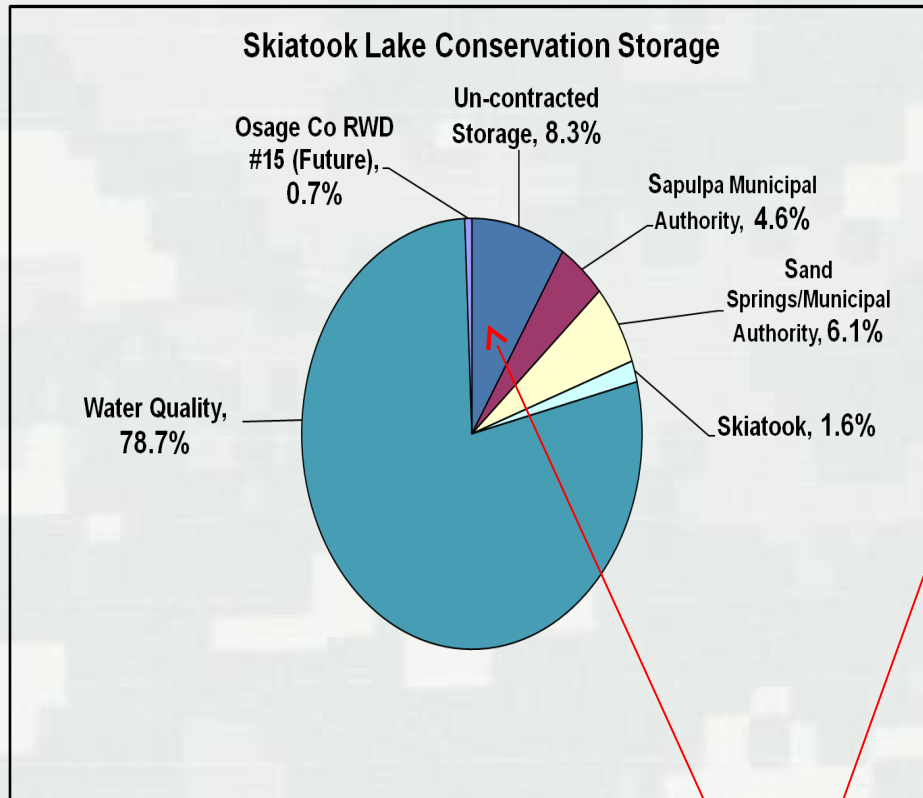


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# Skiatook Lake

## Conservation Pool



## Water Accounting

		Beginning	Final	Remaining
End of Period		Storage	Storage	Storage
Date	Users	(ac-ft)	(ac-ft)	(percent)
9/30/2014	Lake Storage	199119		
30-Sep-14	Lake Conservation Storage	187933	178001	57.38%
30-Sep-14	Un-contracted Storage	23190	22914	85.95%
30-Sep-14	Sapulpa Municipal Authority	6683	6275	46.52%
30-Sep-14	Sand Springs/Municipal Authority	10003	9539	53.02%
30-Sep-14	Skiatook	2023	1880	39.49%
30-Sep-14	Water Quality	133551	125058	53.67%
30-Sep-14	Sediment Storage	10719	10591	85.95%
30-Sep-14	Osage - Future Storage Contracted	1764	1744	87.18%

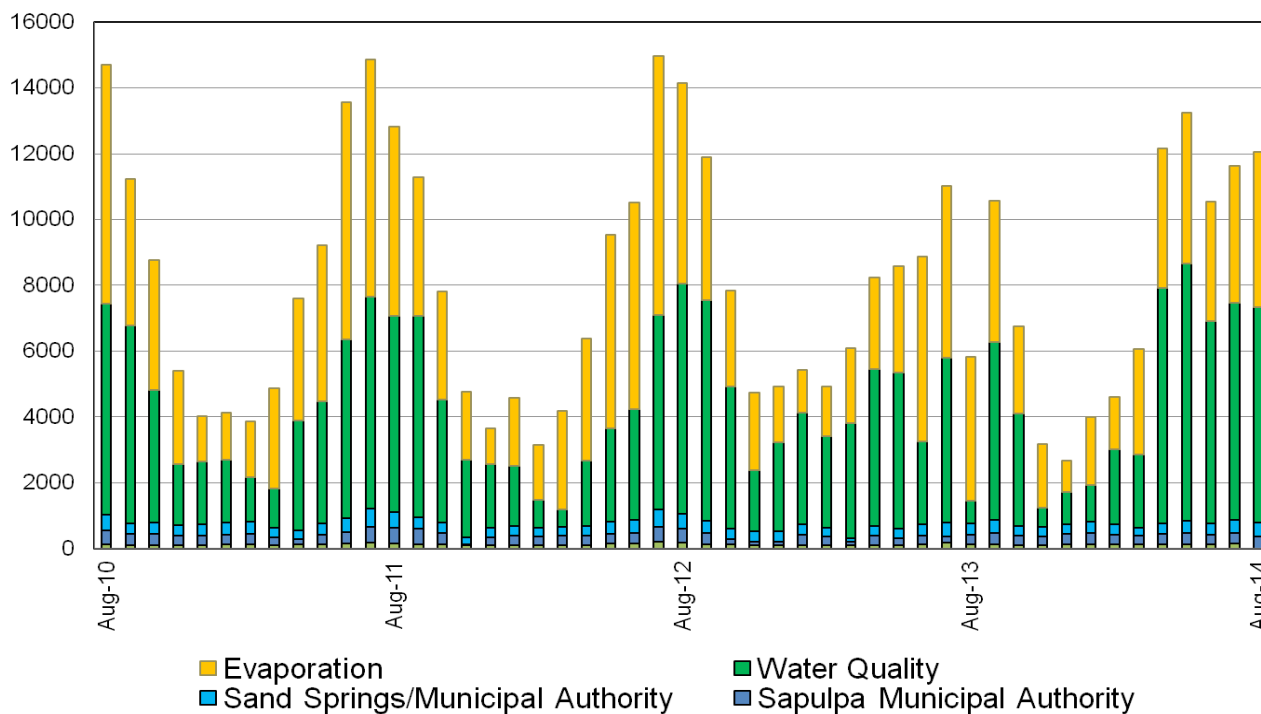
**Significant**



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# Skiatook Lake

## Skiatook Lake Monthly Withdrawals in Acre-Feet



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# Skiatook Lake

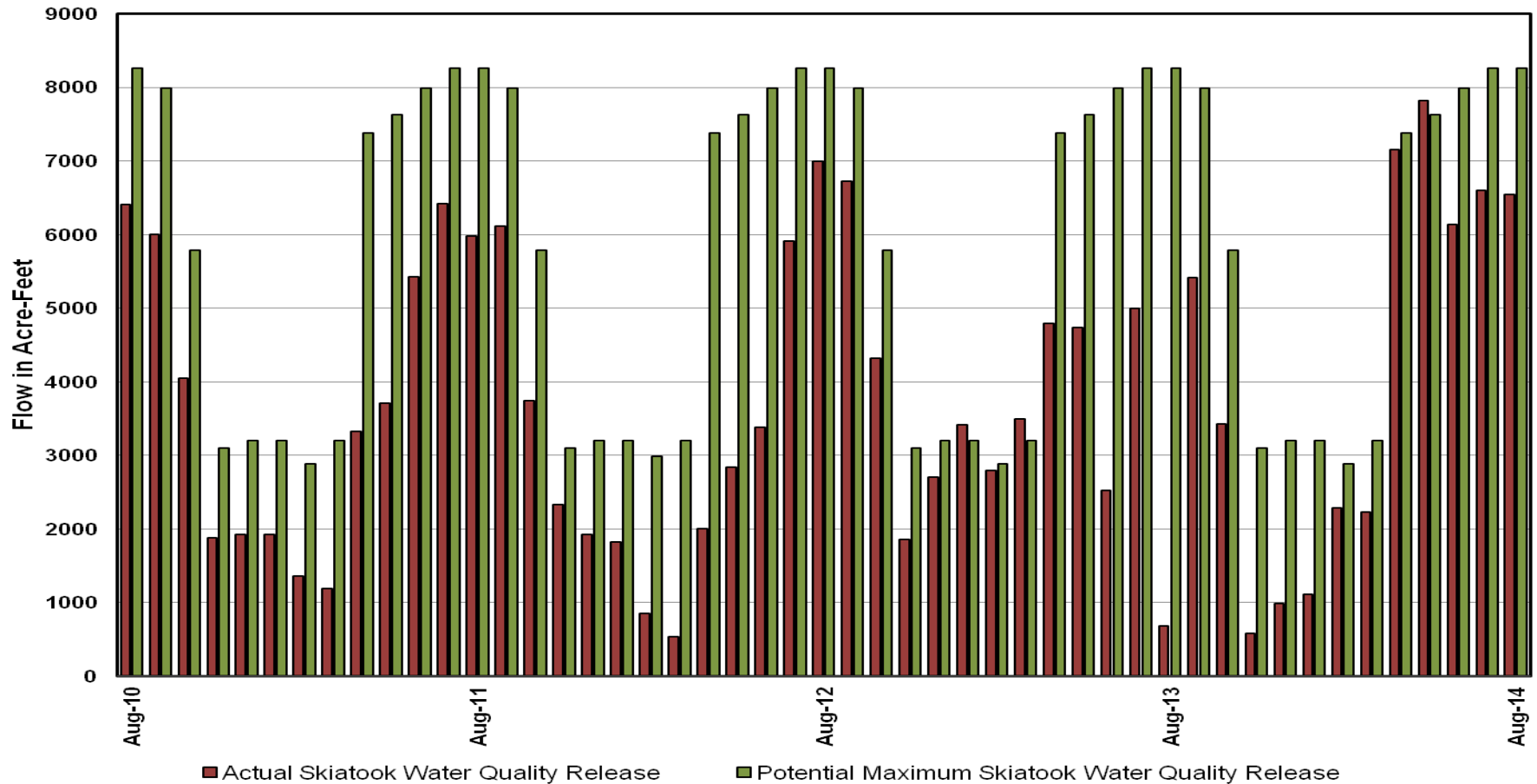
Releases from **Skiatook Lake** for water quality control will be made together with releases from **Birch Lake** and runoff from the uncontrolled drainage areas below Birch and Skiatook Lakes to meet the flow schedule at the Sperry gage.

Low Flow Requirements at Sperry, OK on Bird Creek In Cubic Feet per Second (cfs)				
Oct 1 - Oct 15	Oct 16 - Mar 31	Apr 1 - May 31	Jun 1 - Sep 30	Annual Average
154	53	130	142	99.7



# Skiatook Lake

Skiatook Actual and Potential Maximum Water Quality Release

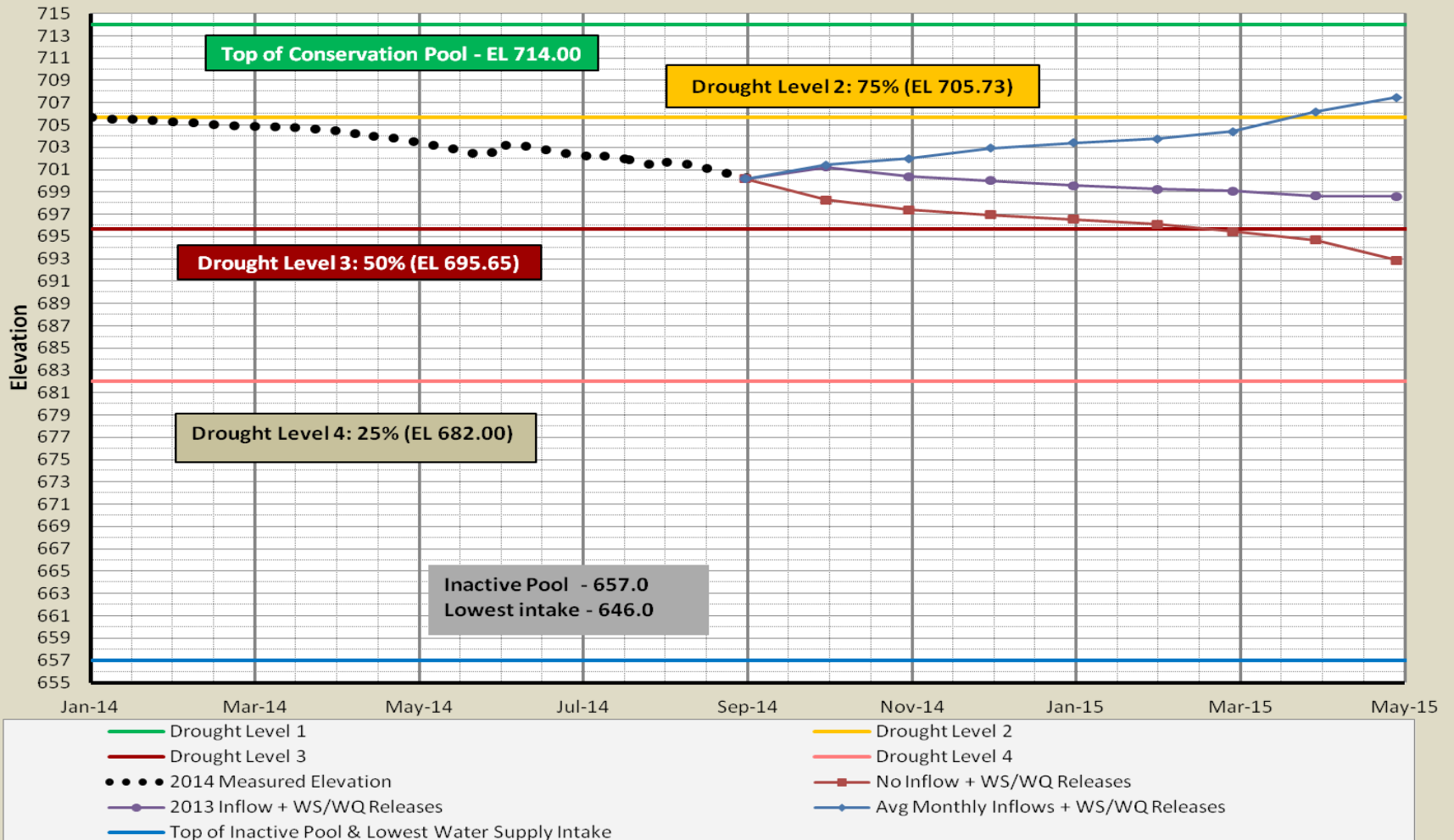


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# SKIATOOK POOL ELEVATIONS - MEASURED AND PROJECTED

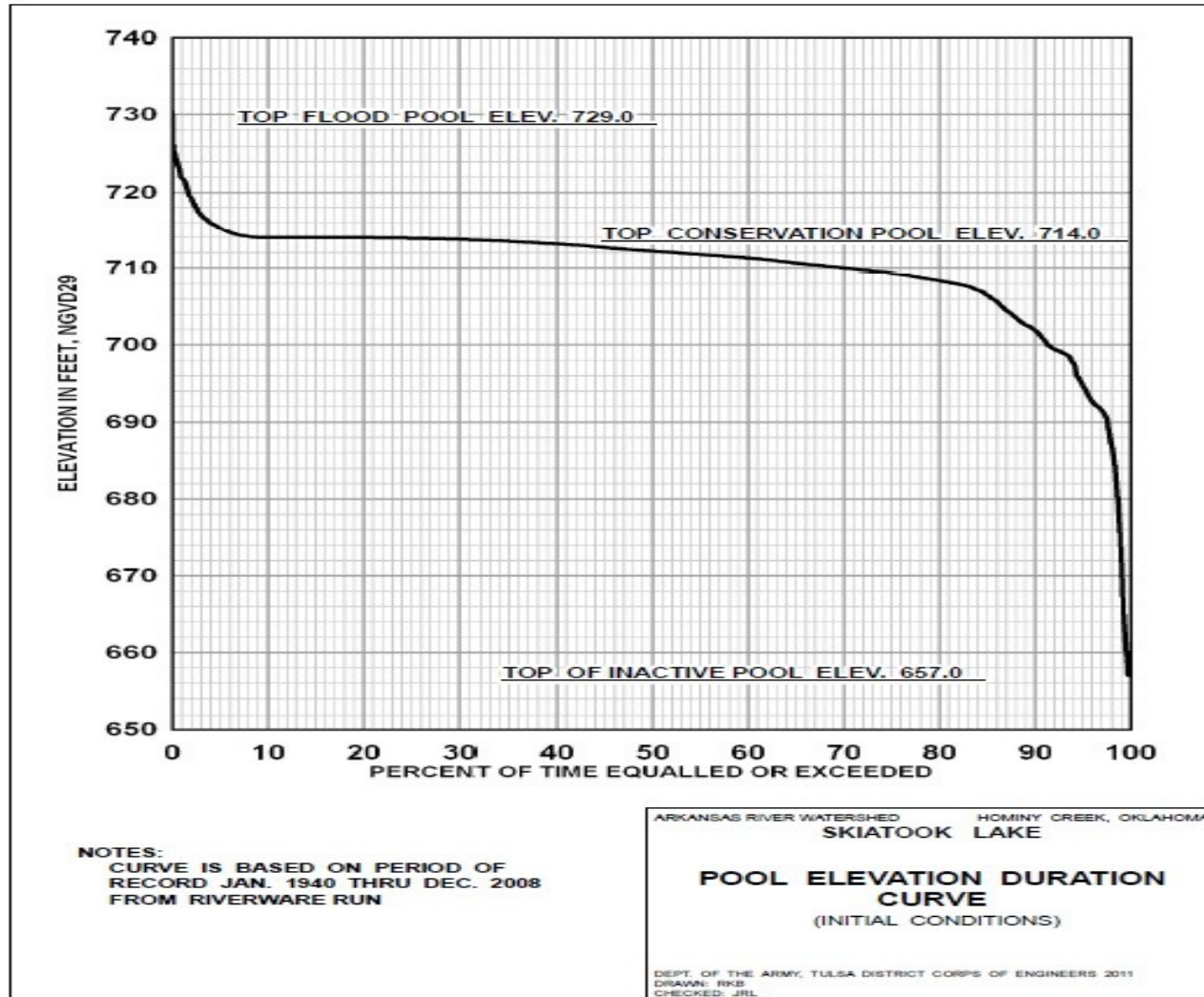
Assuming Drought Condition Evaporation Rates



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# Skiatook Lake

## Elevation - Duration



# Skiatook Lake

## Elevation - Duration

Percent of Time at or Below Pool Elevation	
Percent	Pool Elevation
80%	714.0
50%	712.2
30%	710.1
20%	708.4
10%	701.9
7%	698.3
5%	694.7



# Skiatook Lake

- We are in a significant, multi-year drought.
- Skiatook is a large lake with a small watershed.
- Skiatook has significant demands on its conservation pool. Water quality and evaporation are the largest, followed by water supply.
- The project purposes are flood control, water quality, water supply, fish and wildlife, and recreation. We operate for Congressionally authorized purposes, with flood control, water quality, and water supply having allocated storage.





# INCOG Presentation



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# OPDES Permit Wasteload Allocations That Depend Upon Skiatook Releases

